

PATENT

Attorney Docket No.: D02318

## IN THE UNITED STATES PATENT &amp; TRADEMARK OFFICE

RECEIVED  
CENTRAL FAX CENTER  
DEC 01 2005Applicants: Douglas S. Makofka  
John Okimoto  
Reem Safadi  
Lawrence D. Vince  
Eric J. Sprunk

Confirmation No.: 8900

Customer No.: 000043471

U.S. Serial No.: 09/736,617

Art Unit: 2614

Filed: November 28, 2001

Examiner: Jason P. Salice

Title: CONDITIONAL ACCESS FOR FUNCTIONAL UNITS

## DECLARATION UNDER 37 C.F.R. § 1.131

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir,

I, Eric J. Sprunk, hereby declare as follows:

1. I am a named and true inventor in the above referenced patent application and that I am an inventor of the subject matter disclosed and claimed in the above referenced patent application.
2. Upon information and belief, John Okimoto and Douglas Makofka submitted a description of the invention, now claimed in the above application, in the form of a signed Invention Record, to the law department of General Instrument Corporation in January of 2000. A copy of the Invention Record Form is provided with this declaration as Attachment A. General Instrument Corporation Invention Record Form No. D02318.

U.S. Serial No.: 09/736,617

3. I, along with my co-inventors, Douglas Makofka, John Okimoto, Lawrence Vince, and Reem Safadi, conceived the invention recited in the above application prior to August 31, 2000. See, Attachment A.

4. I, along with my co-inventors, constructively reduced the invention to practice prior to August 31, 2000, and this reduction was memorialized in General Instrument Corporation Invention Record Form No. D02318 (dated January 26, 2000, January 28, 2000, and marked as "RECEIVED" by the General Instrument Corporation Intellectual Property Law Department on February 8, 2000. See Attachment A.

5. Upon information and belief, the date of receipt of General Instrument Corporation Invention Record Form No. D02318 by the General Instrument Corporation law department was February 8, 2000, as evidenced by the "General Instrument Corporation Intellectual Property" date stamp "FEB 8 2000" visible on the first page of Attachment A.

6. I hereby declare that all statements made herein based upon knowledge are true, and that all statements made based on upon information and belief are believed to be true. These statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under § 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

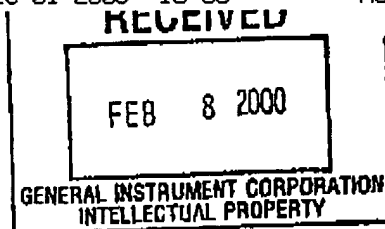
Dated: 1 Dec 2005By: Eric J. Sprunk

Eric J. Sprunk

U.S. Serial No.: 09/736,617

APPENDIX A

General Instrument Corporation Invention Record Form No. D02318



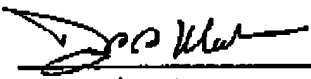
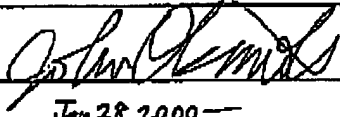
General Instrument Corporation®  
Intellectual Property Department  
For Internal Use Only

## Invention Record Form

GI Docket No. ~~D2318~~  
D2318

## I. Administrative Information

1. Short Descriptive Title of the Invention: D2318 - RESOURCE CONTROL DATA STRUCTURE (RCDS) MAPPING
2. Identify all persons who contributed to this invention, including persons from other divisions and/or outside companies:

	Inventor 1	Inventor 2
Full Legal Name	Douglas S. Makofka	John I. Okimoto
Home Address	516 Fairhill St	11936 Tivoli Park Row #1
City, State, Zip	Willow Grove, PA 19090	San Diego, CA 92128
Citizenship	USA	USA
Division/Co. Location	DNS - Horsham	DNS - San Diego
Office Phone No	215 323 1768	858 404 2608
Mgr.'s Name & Phone No	Thomas du Breuil 215 323 1751	Annie Chen 858-404-2537
Signature of Inventor		
Date	1/26/00	Jan 28, 2000
	Inventor 3	Inventor 4
Full Legal Name		
Home Address		
City, State, Zip		
Citizenship		
Division/Co. Location		
Office Phone No		
Mgr.'s Name & Phone No.		
Signature of Inventor		
Date		

3. ☐ Check box if there are additional inventors listed on separate sheets. Additional information concerning inventors, if any

GI CONFIDENTIAL &amp; PROPRIETARY

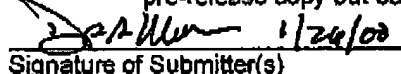
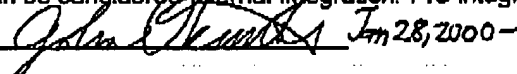
Rev 02/98

## Invention Record Form

## II. Background Information

- 1 Do you believe this invention was developed while working under or in the performance of experimental, developmental or research work called for by a government contract or with the understanding that a government contract would be awarded? ☒ No ☐ Yes If yes, please explain:
- 2 Has your invention been disclosed to anyone outside General Instrument in a speech, exhibit, presentation, product, product manual, report, lecture, trade show, technical article, publication or otherwise? ☐ No ☒ Yes If yes, please explain: Has been described under NDA to ATT, Microsoft, Sun, @Home, and possibly others
- 3 Is this invention related to any previous GI invention disclosures of which you are aware (made by you or someone else)? ☐ No ☒ Yes If yes, please explain: May be related to software A&A, and anything with the PROS
- 4 Name of product(s) and/or project(s) for which this invention was developed:
- DCT5000
- 5 Planned or actual use of invention:
- Is being developed for DCT5000 Resource Access Control
- 6 What economic benefits do you think GI can derive from this invention?
- Gives MSO control over set-top resources for billing purposes - competitive advantage
- 7 When do you expect a product incorporating this invention to be sold, offered for sale or shown to someone outside of GI? (If a product or prototype has already been sold, offered for sale or shown, please identify the earliest date this happened.)
- Some time in 2000
- 8 Has a working model of the invention been built and tested (or appropriate software been written)? ☒ No ☐ Yes If yes, who has witnessed a demonstration, and when?

RCDS structure has been implemented in the PROS It's in GI SI&T lab since 9/99. ATT lab also has a pre-release copy but can be considered internal integration. Pre-integration of the API's supporting the RCDS

 1/24/00  Jan 28, 2000 -  
Signature of Submitter(s)

Date

Read and understood by [Witness Signature(s)]

Date

GI CONFIDENTIAL &amp; PROPRIETARY

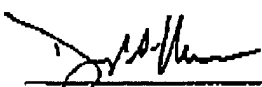

Rev 02/98

**Invention Record Form**

have been tested in the SI Lab The APIs supporting RCDS in the firmware are implemented as well. The APIs will be integrated with the rest of the set top firmware in 01/00.

9. List below any patents, publications, articles, texts, products, etc. which describe technology similar to your invention including reference material which may be useful in understanding the background technology of your invention. (Use a separate sheet if necessary and attach a copy of each item. Please include copies of all bibliographical information.) (Use a separate sheet if necessary)

Java Policy Files, Web-Server-based protocol access control are two general areas. This invention is also related to video conditional access control, which is described in SCTE-DVS standards, as well as internal GI documentation.

 1/24/00  Jan 28, 2000

Signature of Submitter(s)

Date

Read and understood by [Witness Signature(s)]

Date

GI CONFIDENTIAL &amp; PROPRIETARY

Rev 02/98

**Invention Record Form****III. Description of the Invention**

1. Please provide a very brief (i.e., one short sentence) summary of your invention

The Resource Control Data Structure (RCDS) provides a mechanism for mapping set-top resources (such as IO Ports, and software API's) to tier bits. This mapping to tier bits allows the resource to be access controlled in a manner similar to video services, such that a billing system, via an access controller can control set-top resources just as it controls access to video services

2. Briefly describe the field of technology to which your invention relates.

This invention relates to the access control of client devices in digital broadband networks

3. Briefly describe the problems, issues or needs which led to the invention

In order to be able to derive revenue from services related to the use of specific resources in a client device (such as a digital set-top), it is necessary to be able to control the ability of certain software in the client device to access the resource. This control must be secure, to protect against attacks which could allow the client device to provide services for which the proper agreement (payment) to the MSO

4. How have others addressed these problems, issues or needs?

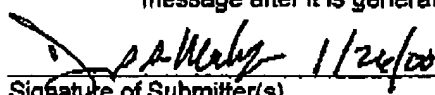
This problem has not been addressed to my knowledge. The closest thing that exists is Java policy files and server-centric resource access control as is performed in the internet community.

5. Describe those particular features or functions of your invention which you think may be novel or technical advancements over the technology you listed in section II 9

This invention allows the mapping of any arbitrary set-top resource into the conditional access control mechanisms used to control access to video services. This invention allows the addition of new resources at any time without having to modify code in the access control mechanism. This invention does not limit what is considered as 'resource'.

6. Best Mode: Describe any and all preferences you personally have regarding how to best implement, build, produce or use your invention (e.g., preferred parts, materials, techniques, etc. which you feel are best in practicing your invention). Each submitter's opinion is important here, even if there is disagreement. Please list anything you think will make the invention better in any way.

This invention is best implemented by modifying existing access controllers - either local or national, to carry a message - called the Resource Control Data Structure (RCDS), to the client device. This message describes what resource ID's exist in the system, and what tiers the client device must be enabled for, in order to access the resource. This message must be secured, preferably by a digital signature, so that any modification of the message after it is generated by the access controller can be detected by the client device

 1/24/00  
Signature of Submitter(s)

 Jan 23, 2000  
Date

Read and understood by [Witness Signature(s)]

Date

GI CONFIDENTIAL & PROPRIETARY

Rev. 02/98

**Invention Record Form**

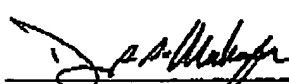

When used with existing access controllers, the mapping of a resource to a tier via the RCDS allows resources to be represented as standard services - just like video channels. These services, which are actually resources, can be controlled by the billing system, which can authorize and deauthorize them. These services can also be PPV or IPPV based.

7. Briefly describe any alternative uses, variations or modifications of your invention which you contemplate.

This mechanism can also be used to control the contents of a policy file - such as is used in Java security. The contents of the policy file could reference resource ID's. The RCDS is consulted to see what tier must be enabled in order for access to the resource, specified in the policy file, to be granted.

This mechanism can be used to control access to specific resources in the network - not just resources in the client device. For example - access to a server in a network, a specific network protocol such as FTP, or access to sets of IP addresses could all be mapped to tiers via the RCDS.

8. Please provide any additional information you think should be known by the attorney reviewing this form.

 1/24/00  Jan 28, 2000

Signature of Submitter(s)

Date

Read and understood by [Witness Signature(s)]

Date

**GI CONFIDENTIAL & PROPRIETARY**

Rev 02/98



**Invention Record Form**

9. Please provide a detailed description of your invention. Your description should ideally provide as many details of your invention as possible in order to achieve optimal patent protection. An ideal disclosure should describe the construction and operation of the invention including drawings (flow charts, schematics, block diagrams, mechanical drawings, photographs, etc.) and any relevant engineering laboratory notebook pages, reports, program listings, etc. If you have already prepared reports or other descriptive information, there is no need to rewrite it. Simply attach it and reference it in your invention disclosure data sheet (for example, "see attached 9 page engineering progress report addressed to John Doe dated 1 Jan, 1992 for description of amplifier circuit")

This invention is described in detail in the following GI documents. Note that these documents also contain material which is related to this invention:

MC-099-060 Object Conditional Access Message Protocol - this specification contains the actual RCDS message.

MC-091-698 CA Subsystem Functional Specification

365-095-760 3rd Party Requirements for Software and Resource Object Conditional Access Control

365-095-884 PROS Interface Specification

365-095-1008 System Technical Specification: Product Level, D5K System Common Local Control Requirements

Also, there is a Viso attachment w/this disclosure describing how the RCDS is produced/carried in the system. Although this is not specifically the point of this invention, it may help as background.

This invention can be implemented in any message or table containing the following elements:

- 1) A table mapping a resource ID to a tier. This table could be a two dimensional array, with the first element being the resource ID, and the second element being the tier (or visa-versa). It could also be a list of tiers, with the resource ID's implied by the position of the tier in the list (first tier -> ID 1, second tier -> ID 2, etc)
- 2) A digital Signature, or other element providing security over the mapping table.
- 3) An address which specifies which client device this mapping applies to. This address could be 'broadcast', in which case the message applies to any client, or other addressing targetting the mapping to a specific client or a group of clients.

 1/24/00 John O'Connell Jan 28, 2000

Signature of Submitter(s)

Date

Read and understood by (Witness Signature(s))

Date

**GI CONFIDENTIAL & PROPRIETARY**

Rev. 02/98